

REMARKS

This Amendment responds to the Office Action mailed January 5, 2010, in the above-identified application. For the following reasons, allowance of the application is respectfully requested.

Claims 1-37 are pending in the application. Claims 11-20 and 22-36 have been withdrawn from consideration. Accordingly, claims 1-10, 21 and 37 are currently under consideration. No claims are amended herein. The pending claims are listed above for the convenience of the Examiner.

The Examiner has rejected claims 1-5, 8, 10, 21 and 37 under 35 U.S.C. §103(a) as unpatentable over MacAulay (US 6,483,641) in view of Holzbach (US 6,795,241) and Anderson (US 6,614,581). Claim 6 is rejected under 35 U.S.C. §103(a) as unpatentable over MacAulay in view of Holzbach and Anderson, further in view of Moranski et al. (US 6,094,289). Claim 7 is rejected under 35 U.S.C. §103(a) as unpatentable over MacAulay in view of Holzbach and Anderson, further in view of Sun (US 6,415,068). Claim 9 is rejected under 35 U.S.C. §103(a) as unpatentable over MacAulay in view of Holzbach and Anderson, further in view of Hosoi (US 6,400,490). The rejections are respectfully traversed for the following reasons.

MacAulay discloses microscopes that have advantages in controlling the light that contacts a sample and/or that is detected emanating from a sample. The control includes selective control of the angle of illumination, the quantity of light and the location of light reaching the sample and/or a detector. One or more spatial light modulators are placed in the illumination and/or detection light path of the microscope at one or both of the conjugate image plane of the aperture diaphragm of the objective lens and the conjugate image plane of the sample (col. 2, lines 54-64). As shown in FIG. 3A of MacAulay, a digital micromirror device 34 is positioned between a sample 20 and a light detector 26. MacAulay teaches that the change in angle of illumination made possible by such microscopes permits the determination of 3-D images of the sample. For example, the sample can be illuminated from a plurality of different angles and then the changes in intensity in the light impinging on the individual pixels and the detection array can be detected and then combined,

compiled and/or reconstructed by a controller to provide a 3-D image of the sample (col. 22, lines 40-47). MacAulay describes the making of a 3-D image at col. 23, lines 53-67 and describes time delayed fluorescence microscopy at col. 24, lines 18-38.

MacAulay describes the spatial light modulator with reference to FIG. 2A. Individual micromirrors of a digital micromirror device are tilted “on” toward an image plane 40 or are tilted “off” toward a beam stop 37 (col. 16, lines 36-55). As shown in FIG. 2C, the time on and time off of each digital micromirror can be controlled between 100% on and 100% off to effect light modulation (col. 16, line 62 to col. 17, line 9). The angles of illumination and detection are controlled by controlling the “on” and “off” positions of the micromirrors.

Holzbach describes a system and method to form a large scale full parallax three dimensional electronic display (Abstract). The 3-D electronic display includes a plurality of lenslet pixel modules and a plurality of two dimensional moving image sources (col. 2, lines 5-8 and col. 12, lines 43-56).

Anderson discloses a microstructure, such as a micromirror, that is movable between a plurality of tilt positions (col. 5, line 50 to col. 6, line 2). An embodiment having five tilt positions is shown in FIGs. 2 and 3A-3E of Anderson (col. 7, lines 32-57).

In the rejection of claim 1, the Examiner concedes that MacAulay in view of Holzbach does not teach that each light path selection element of said plurality of light path selection elements is configured to select different incoming angles of light to come to said light receiving elements at different times to record different images at the different incoming angles of light. However, the Examiner relies upon Anderson for teaching this limitation. In particular, the Examiner contends that it would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the micromirror system of Anderson with the pickup apparatus and digital micromirror device of MacAulay. Applicant must respectfully disagree.

MacAulay in FIG. 3A shows a microscope wherein individual micromirrors of micromirror device 34 are either “on” or “off”. Light from source 4 is either reflected to sample 20 or to beam

stop 37 by each micromirror of micromirror device 34, according to the on or off position of each micromirror. Similarly, light emanating from sample 20 is either reflected to detector 26 or to beam stop 37 by each micromirror of micromirror device 34, according to the on or off position of each micromirror. When a particular micromirror is in the “off” position, light from light source 4 is reflected to beam stop 37 (col. 16, lines 44-47).

Applicant submits that modifying the micromirrors of micromirror device 34 to reflect at a plurality of angles, as taught by Anderson, would result in the microscope of MacAulay being rendered inoperative. It may be noted that Anderson teaches relatively large changes in micromirror angle (FIG's. 3B-3E) and that MacAulay relates to microscopy for producing magnified representations of relatively small samples (col. 1, lines 17-18). Thus, if the multiple angle micromirror of Anderson was used in the microscope of MacAulay, light from source 4 of MacAulay would not be incident on sample 20, except at one angle of the micromirrors which corresponds to the “on” position taught by MacAulay. At other angles of the plurality of angles, light from source 4 would be reflected at different angles and would not be incident on sample 20. Similarly, light emanating from sample 20 would not be incident on detector 26, except at one angle of the micromirrors corresponding to the “on” position taught by MacAulay. At other angles of the plurality of angles, the light emanating from sample 20 would be reflected at different angles and would not be incident on detector 26. It is submitted that the person of skill in the art would immediately recognize that the asserted combination of Anderson with MacAulay and Holzbach would result in an inoperative device and therefore would not make the asserted combination.

Based on the foregoing, it is submitted that the combination of Anderson with MacAulay and Holzbach does not meet the requirements of MPEP §2143(G), which requires that, to combine prior art teachings to arrive at the claimed invention, there must be a finding that there was a reasonable expectation of success. The expectation of success is absent in the asserted combination of Anderson with MacAulay and Holzbach. Accordingly, it is submitted that the combination of references is improper and should be withdrawn. In the alternative, the combination of MacAulay with Holzbach and Anderson does not teach a three-dimensional image pickup apparatus comprising, in part, a plurality of light path selection elements, *each light path selection element of*

said plurality of light path selection elements configured to select different incoming angles of light to come to said light receiving elements at different times to record different images at different incoming angles of light, as required by Applicants' claim 1.

For at least these reasons, claim 1 is clearly and patentably distinguished over MacAulay in view of Holzbach and Anderson, and withdrawal of the rejection is respectfully requested.

Claims 2-9 depend from claim 1 and are patentable over the cited references for at least the same reasons as claim 1.

Claim 10 is directed to a three-dimensional image pickup apparatus comprising, in part, incoming angle acquisition means for acquiring corresponding incoming angle information of the received light at different incoming angles and at different times, said incoming angle acquisition means comprising a plurality of light path selection elements, *each light path selection element of said plurality of light path selection elements configured to select different incoming angles of light to come to said light intensity acquisition means at different times.*

As should be apparent from the above discussion, the combination of MacAulay, Holzbach and Anderson does not teach a three-dimensional image pickup apparatus including a plurality of light path selection elements wherein each light path selection element is configured to select different incoming angles of light, as required by claim 10. For at least these reasons and the reasons discussed above, claim 10 is clearly and patentably distinguished over MacAulay in view of Holzbach and Anderson, and withdrawal of the rejection is respectfully requested.

Claim 37 is directed to an information recording method and contains method limitations that correspond to the apparatus limitations of claim 10. As should be apparent from the above discussion, claim 37 is clearly and patentably distinguished over MacAulay in view Holzbach and Anderson, and withdrawal of the rejection is respectfully requested.

Claim 21 is directed to a three-dimensional image pickup and display apparatus comprising a light reception section and light emission section. The light reception section includes a plurality

of light receiving elements and a plurality of first light path selection elements for selecting different incoming angles of light to come to said light receiving elements at different times, *each first light path selection element of said plurality of first light path selection elements configured to select different incoming angles of light to come to said light receiving elements at different times*. The light emission section includes a plurality of light emitting elements and a plurality of second light path selection elements for selecting corresponding different outgoing angles of light to be emitted from said light emitting elements at different times, *each second light path selection element of said plurality of second light path selection elements configured to select different outgoing angles of light to be emitted from said light emitting elements at different times*.

As should be apparent from the above discussion, the combination of MacAulay, Holzbach and Anderson does not teach a plurality of first light path selection elements wherein each of the first light path selection elements is configured to select different incoming angles of light and does not teach a second plurality of light path selection elements wherein each of the second light path selection elements is configured to select different outgoing angles of light. For at least these reasons and the reasons discussed above, claim 21 is clearly and patentably distinguished over MacAulay in view of Holzbach and Anderson, and withdrawal of the rejection is respectfully requested.

Based upon the above discussion, claims 1-10, 21 and 37 are in condition for allowance.

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, the Director is hereby authorized to charge

any deficiency or credit any overpayment in the fees filed, asserted to be filed or which should have been filed herewith to our Deposit Account No. 23/2825, under Docket No. S1459.70077US00 from which the undersigned is authorized to draw.

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Respectfully submitted,

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